

Curriculum Vitae
Andrew P. Armacost
Major, USAF

Current Position

Associate Professor and Director of Operations Research
Department of Management
United States Air Force Academy
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Education

Ph.D., Operations Research, Massachusetts Institute of Technology, 2000
Thesis: *Composite Variable Formulations for Express Shipment Service Network Design* (Supervised by Prof. Cynthia Barnhart)

S.M., Operations Research, Massachusetts Institute of Technology, 1995
Thesis: *Modeling Railroad Terminal Operations: Supporting Real-Time Network Planning and Control* (Supervised by Prof. Cynthia Barnhart)

B.S., Industrial Engineering, Northwestern University, 1989
Thesis: *Interior Point Methods for Network Flow Problems* (Supervised by Prof. Sanjay Mehrotra)

Academic Experience

Department of Management (AACSB Accredited), USAF Academy
Associate Professor, 2002; Assistant Professor, 2000; Instructor, 1995-97
Courses Director:

Intro to Problem Solving and Ops Research (OR 310)
Production and Operations Management (Mgt 477)
Capstone Course in Operations Research (OR 420)
Managerial Decision Models (Mgt 371)
Senior Seminar in Operations Research (OR 405)
Urban Operations Research (OR 495)

Additional Courses Taught:

Introduction to Management (Mgt 210)

Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, *Teaching Assistant 1999* (Carrier Systems –1.224)

Professional Experience

Program Manager for Joint Intelligence Centers, Hanscom AFB, MA, 1992-93
Director of Events and Visits, Commander's Staff, Hanscom AFB, MA, 1991-92
Director, Intelligence Integration and Test Facility, Hanscom AFB, MA 1989-91

Published Papers

A. P. Armacost, C. Barnhart, K. A. Ware, and A. M. Wilson, "UPS Optimizes its Air Network," *Interfaces*, Vol 34, No. 1, pp. 15-25, Jan 2004.

C. A. Nielsen, **A. P. Armacost**, C. Barnhart, and S. Kolitz, "Composite Variable Formulations for Air Force Mobility Routing and Scheduling," *Mathematical and Computer Modeling*, Vol 39, No. 6-8, pp. 925-943, May 2004.

A. P. Armacost and J. K. Lowe, "Delivering Value: An Undergraduate Operations Research Consulting Course," *INFORMS Transactions on Education*, Jan, 2003.

A. P. Armacost and J. K. Lowe, "Decision Support for the Career Field Selection Process at the U.S. Air Force Academy," *European Journal of Operational Research* (accepted, Sept 2002, appearing 2004).

A. P. Armacost, C. Barnhart, and K. A. Ware, "Composite Variable Formulations for Express Shipment Service Network Design," *Transportation Science*, Jan, 2002.

A. P. Armacost, C. Barnhart, K. A. Ware, A. M. Wilson, and W. C. DuPuy, "Planning the Overnight Air Network at UPS," *Interfaces*, Nov, 2001

A. P. Armacost and S. Mehrotra, "A Computational Comparison of the Dual Affine Scaling Method with the Network Simplex Algorithm," *OPSEARCH*, Vol 21, No. 1, 1990.

Working Papers

A. P. Armacost, "A Composite Variable Approach for the Pure Fixed Charge Transportation Problem."

A. P. Armacost, "Extended Formulations for the Fixed Charge Transportation Problem."

J. K. Lowe and **A. P. Armacost**, "Implementing a New Career Field Assignment Approach for the U.S. Air Force Academy."

E. J. Zarybnisky, **A. P. Armacost**, C. Barnhart, L. Keilbling, and S. Kolitz, "Optimizing the Allocation of Air Assets in a Dynamic Battlespace."

S. F. Baker, **A. P. Armacost**, L. Lehmkuhl, and T. De La Cruz, "Optimization Models for Scheduling the Air Force Satellite Control Network."

C. G. Koepke, **A. P. Armacost**, C. Barnhart, and S. Kolitz, "Real-Time Planning for Air Mobility Channel Route Operations."

A. P. Armacost and C. J. Hubbard, "Network Design Approaches for Final Exam Scheduling."

A. P. Armacost and R. Block, "Optimization Methods for Reductions in Experimental Design."

Presentations

A. P. Armacost, C. Barnhart, K. Ware, and A. Wilson, "Designing the UPS Air Network," Invited Seminar Presentation, University of Colorado, Boulder, CO, April 2004.

A. P. Armacost, E. J. Zarybnisky, S. Kolitz, C. Barnhart, and L. Keilbling, "Allocating Air Assets Against an Intelligent Adversary," INFORMS 2003 Fall Conference, Atlanta, GA.

A. P. Armacost, C. A. Nielsen, C. Barnhart, and S. Kolitz, "Designing Air Mobility Command's Channel Route Network: A Composite Variable Formulation," INFORMS 2003 Fall Conference, Atlanta, GA.

A. P. Armacost, C. Barnhart, K. Ware, A. Wilson, and M. Doda, "Planning the UPS Air Network," Franz Edelman Prize Competition Reprise, INFORMS 2003 Fall Conference, Atlanta, GA.

A. P. Armacost, E. J. Zarybnisky, S. Kolitz, and C. Barnhart, "Allocating Air Assets Against an Intelligent Adversary," 71st Military Operations Research Society (MORS) Symposium, Quantico, VA, June 2003.

S. F. Baker, **A. P. Armacost**, L. Lehmkuhl, and T. De La Cruz, "Optimization Models for Scheduling the Air Force Satellite Control Network," 71st Military Operations Research Society (MORS) Symposium, Quantico, VA, June 2003.

A. P. Armacost, C. A. Nielsen, S. Kolitz, and C. Barnhart, "Composite Variable Methods for Mobility Planning and Execution," Air Force Office of Scientific Research (AFOSR) Program Review, Estes Park, CO, May 2003.

A. P. Armacost, C. Barnhart, K. Ware, A. Wilson, and M. Doda, "Planning the UPS Air Network," Franz Edelman Prize Competition, INFORMS Practice Conference, Phoenix, AZ, May 2003.

J. K. Lowe and **A. P. Armacost**, "Decision Support for the US Air Force Academy Career Field Selection Process," 2002 Academy of Management Conference, Denver, CO, August 2002

C. A. Nielsen, **A. P. Armacost**, C. Barnhart, and S. Kolitz, "Designing Air Mobility Command's Channel Route Network: A Composite Variable Formulation," 70th Military Operations Research Society (MORS) Symposium, Ft Leavenworth, KS, June 2002.

A. P. Armacost and J. K. Lowe, "A Suite of Models to Support the Air Force Academy Career Field Classification Process," 70th Military Operations Research Society (MORS) Symposium, Ft Leavenworth, KS, June 2002.

A. P. Armacost, S. Baker, H. Holtz, T. DeLaCruz, and L. Lehmkuhl, "Optimization Methods for AF Satellite Control Network Planning" 70th Military Operations Research Society (MORS) Symposium, Ft Leavenworth, KS, June 2002.

A. P. Armacost, "Composite Variable Formulations for Express Shipment Service Network Design," George B. Dantzig Dissertation Prize Competition, INFORMS 2001, Miami, FL, Nov 2001.

A. P. Armacost and J. K. Lowe, "Decision Support for USAFA Career Field Assignments," 69th Military Operations Research Society (MORS) Symposium, Annapolis, MD, June 2002.

A. P. Armacost, C. Barnhart, and K. Ware, "Composite Variable Formulations for Express Shipment Service Network Design," INFORMS 2000, San Antonio, TX. 5-8 Nov 2000.

C. Barnhart and **A. P. Armacost**, "Transportation Network Design: An Express Shipment Service Application," ODYSSEUS 2000 The First International Workshop on Freight Transportation and Logistics, Chania, Crete, Greece, 23-26 May, 2000 (Plenary)

C. Barnhart and **A. P. Armacost**, "Composite Variable Formulations for Express Shipment Service Network Design," AGIFORS 2000 Cargo Study Group Meeting, 13-14 June 2000, Louisville, KY. (Invited)

C. Barnhart, **A. P. Armacost**, and M. Lohatepanont, "Airline Schedule Design," Meeting on Traffic and Transport Optimization, Oberwolfach-Walke, Nov. 7-13, 1999. (Invited)

K. A. Ware, **A. P. Armacost**, and C. Barnhart, "Planning Models for Designing Express Shipment Service Networks," 39th Annual Symposium of the Airline

Group of the International Federation of Operations Research Societies (AGIFORS), May, 1999. (Invited)

J. K. Lowe and **A. P. Armacost**, "External Review of the OR Curriculum: Graduate and Supervisor Survey." Colorado Regional Higher Education Assessment Conference. Golden, CO. Apr 1998.

A. P. Armacost, C. Barnhart, N. Krishnan, G. Reinhardt, and K. A. Ware, "Network Design for Express Shipment Delivery." INFORMS Montreal, April, 1998. (Invited)

A. P. Armacost, "Survey Results: Undergraduate Operations Research Evaluation." INFORMS San Diego, May, 1997

A. P. Armacost, and C. Barnhart, "Modeling Railroad Terminal Operations." INFORMS Los Angeles, April, 1995.

A. P. Armacost, and S. Kolitz, "Weather Models for Air Traffic Flow Control." INFORMS Los Angeles, April, 1995.

Case Studies

A. P. Armacost and J. K. Lowe, "The Urban Foresters," Sept, 2003. *A case study involving districting of maintenance crews through the city of Colorado Springs, CO, with implementation in Excel using the Excel Solver.*

A. P. Armacost and J. K. Lowe, "Pension Planners, Inc.," Sept, 2002. *A case study that involves classic portfolio optimization methods and their implementation in Excel.*

A. P. Armacost and J. K. Lowe, "Tornado Chasers," Sept, 2002. *A case study applying basic trigonometry and linear algebra to the problem of triangulating the position of a tornado using Excel spreadsheets. This is an outgrowth of work on a bomb-scoring system development for the CO Air National Guard.*

A. P. Armacost, "Package Delivery at Parcel Express," Oct, 1999. *A case study of the effects of formulation strategy on solving optimization models for express shipment.*

Awards

Research

- *Best Paper in Transportation and Logistics*, awarded by the Transportation Science and Logistics Section of the Institute for Operations Research and the Management Sciences (INFORMS), 2003.
- *Robert B. Taylor Research Award*, presented by the US Air Force Academy Department of Management, 2003.

- *Franz Edelman Award for Achievement in the Management Sciences*, awarded by the Committee for the Practice of the Management Sciences (CPMS) of INFORMS, 2003
- *First Prize, George B. Dantzig Dissertation Award*, awarded by the Institute for Operations Research and the Management Sciences (INFORMS), 2001.
- *Second Prize, Transportation Science Section Dissertation Prize*, awarded by the Transportation Science Section of INFORMS, 2001.
- *Robert B. Taylor Research Award*, presented by the US Air Force Academy Department of Management, 2001.
- *McDermott Award for Research Excellent in the Social Sciences*, runner-up, presented by the US Air Force Academy, 2003
- Nominee, 2002 *Air Force Analyst of the Year*
- Nominee, 2001 *Barchi Prize*, awarded by MORS for the best paper of the Manpower and Personnel Working Group, 2001 Military Operations Research Society (MORS) Symposium.
- Best Presentation, AGIFORS 2000 Cargo Study Group Meeting, June 2000
- Best Presentation, 39th Annual Symposium of the Airline Group of the International Federation of Operations Research Societies (AGIFORS), April 1999

Teaching

- *William Heiser Award for the Outstanding Senior Educator*, Selected by the Class of 2003, USAF Academy
- *Outstanding Academy Educator*, United States Air Force Academy, 2002
- *James R. Woody Teaching Award* for Upper Division Courses, Department of Management, US Air Force Academy, 2001
- Top-Rated Teaching Assistant, Dept of Civil and Env Engineering, MIT, 1999
- *Instructor of the Year*, Operations Research, US Air Force Academy, 1997

Service

To the US Air Force Academy

- Chair, Interdisciplinary Operations Research Working Group, 2002-3
- Undergraduate Program Coordinator (Advisor in Charge), Operations Research, 2001
- Chair, USAF Academy Draper Fellowship Selection Committee, 2001-3
- Social Science Division Student Research Award Committee, 2001
- Operations Research Curriculum Committee, 1995-1997, 2000-01
- Department of Management Personnel Committee, 2000-01
- Dean of Faculty Educational Assessment Working Group, 1996-97
- Social Science Division Educational Assessment Working Group, 1996-97
- Technical Advisor, USAFA General Board and AFSC Classification Process, 2000-2003

- Technical Advisor, USAFA Air Officer Commanding Selection Board, 2003

To External Academic Institutions

- Masters thesis co-advisor for Corbin Koepke, MIT, 2002-04
- Masters thesis co-advisor for Eric Zarybniski, MIT, 2001-03
- Masters thesis co-advisor for Christopher Nielsen, MIT, 2000-01
- Masters thesis reader, Rob Sickorez, Naval Postgraduate School, 2002-3
- Strategic Review Committee, US Coast Guard Academy OR program

To Professional Societies

- American Institute of Aeronautics and Astronautics (AIAA) Transportation Systems Technical Committee
- Airline Operations Track Coordinator, INFORMS Fall 2003 conference
- MORS Educational Colloquium Committee, 2001
- INFORMS National Conference Session Chair, 1997
- INFORMS Task Force on Young Member Recruitment and Retention, 1996-97
- INFORM On-Line Student Union Launch Team, 1996-97

Editorial Activities

Reviewer, Naval Research Logistics
Reviewer, Transportation Science
Reviewer, Computational Optimization and Applications
Reviewer, Journal of Global Optimization
Reviewer, Mathematical and Computer Modeling

Consulting and Grants

“Optimization Applications to Airlift and Logistics Planning,” for the USAF Air Mobility Command, Scott AFB, IL; grant awarded by the Air Force Office of Scientific Research, 2002-4 (\$35K).

“Decision Support for Air Force Officer Career Field Assignments,” with J. K. Lowe, for the Air Force Personnel Center, Randolph AFB, TX, and the US Air Force Academy Director of Personnel, 2000-2003 (cadet involvement through OR capstone course).

“Implementing Aircraft Routing and Scheduling Algorithms,” for the United Parcel Service, 1998-2003.

“AF Satellite Control Network Planning and Scheduling,” with S. Baker and H. Holtz, for AF Space Command, 2002-3.

“Pension Plan Portfolio Optimization and Rebalancing Strategies,” with W. W. Jennings for the USAF Academy Association of Graduates, 2000-2001.

“Production Planning for a Bone and Tissue Bank” for AlloSource, Inc., 2003-4.

“Districting of Park Maintenance Crews” for City of Colorado Springs Parks and Recreation Department, 2004.

“Traffic Flow Study at USAF Academy Entry Control Points” for USAFA Security Forces Squadron, 2004.

“Mail Distribution System Redesign” for the Colorado Springs Police Department, 2004.

“Scheduling Models for Summer Programs at the USAF Academy” for USAFA Summer Programs Office, 2004.

“Value-Focused Thinking for Joint Forces Entry Operations Capability Analysis” for the Joint Staff/J-8, 2004.

“Districting of Foresters and Work Crews” for City of Colorado Springs Department of Urban Forestry, 2003.

“Designing a Community Recycling Program” for Manitou Springs Recycles Committee, 2003.

“Efficiency Study of Call Center Operations” for City of Colorado Springs Police Department, 2003.

“Workflow Improvements for Impound Lot Operations” for City of Colorado Springs Police Department, 2003.

“Simulation-Based Forecasting of Call Center Operations” for USAA, 2003.

“Second-Order Taxation Effects of Credit Unions versus Banks” for Air Academy Federal Credit Union, 2003.

“Multi-Attribute Strategic Planning for Non-Profit Programming” for Major League Baseball Players Alumni Association, 2003.

“Development of a New Range Bomb-Scoring Program,” with J. Contreras, for the CO Air National Guard, 2002.

“Efficiency Improvements for the Cadet Graduation Physical Exams Process,” for the 10th Medical Group/Cadet Clinic, 2002.

“Final Exam Scheduling,” for DSoft, Inc. and the US Air Force Academy Registrar, 2002.

“Colorado Springs Cemetery Maintenance Planning,” for the City of Colorado Springs, 2002.

“Wildfire Cost Estimation,” for the City of Colorado Springs Fire Department, 2002.

“Locating Sand and Salt Storage Facilities,” for the Colorado Springs Street Division, 1996-1997.

“Collection and Assessment of Customer Feedback,” for the Colorado Springs Airport, 1996-1997 (cadet involvement through OR 420).

Professional Affiliations

Institute for Operations Research and the Management Sciences (INFORMS)

Transportation Science Section of INFORMS

Committee for the Practice of the Management Sciences (CPMS)

Military Applications Society of INFORMS

Academy of Management

Military Operations Research Society

Tau Beta Pi, Engineering Honor Society

Omega Rho, Operations Research Honor Society